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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,341	10/09/2003	Rene Paquet	2993-469US RM/JR/as	3382
32292	7590	05/26/2005	EXAMINER	
OGILVY RENAULT LLP (PWC) 1981 MCGILL COLLEGE AVENUE SUITE 1600 MONTREAL, QC H3A 2Y3 CANADA			VERDIER, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/681,341

Applicant(s)

PAQUET ET AL.

Examiner

Christopher Verdier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3-9-04, 3-3-05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Applicants' Amendment dated March 3, 2005 has been carefully considered but is non-persuasive. Claims 1-17 are pending. The Replacement Sheet of drawings correcting the drawing objection set forth in the previous Office action is acceptable. The new declaration is acceptable. The claims have been amended to adopt the examiner's suggested claim language, to correct claim 6 by amending it to depend on claim 5, to correct the informalities in the claims, and to overcome the rejection of claim 5 under 35 USC 112, second paragraph. Correction of the above matters is appreciated.

With regard to the rejection of claims 1-5 and 7-16 under 35 U.S.C. 102(b) as being anticipated by Beanland 3,576,377, Applicants have argued that independent claims 1 and 7 define over Beanland because Beanland discloses abutment surfaces 15 that form part of a separate bridge piece 16 fitted over the top portion of the shroud 11, while amended independent claims 1 and 7 recite that the opposed bearing faces are integrally formed with the shroud. This argument is persuasive.

With regard to the rejection of claims 1-6 and 7-16 under 35 USC 102(b) as being anticipated by Erdmann 5,083,903, Applicants have argued that the additional contact face inserts 38 and 40 include the wear or bearing surfaces 18 and 20 thereon which are independently formed and fastened or affixed in place to the cast shroud of the blade assembly, and that Erdmann fails to teach or suggest the subject matter of amended claims 1 and 7 of the instant application. These arguments are respectfully disagreed with, because Erdmann (column 2, lines 44-50 and column 2, lines 58-63) discloses that the inserts 38 and 40, which form the

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wear or bearing surfaces 18, 20, have through apertures 28 therein which are filled by the casting material of the blade shroud when the inserts 38, 40 are cast in situ with the blade shroud 16, and because the casting material extends through the apertures in the inserts, the apertures become mechanically attached to the blade shroud. Because of the in situ casting of the inserts 38, 40 with the blade shroud 16, the opposed bearing faces 18, 20 are considered to be "integrally formed" with the blade shroud.

With regard to the rejection of claims 1-6 and 7-16 under 35 U.S.C. 102(b) as being anticipated by Frost 6,164,916, Applicants have argued (page 9, first paragraph of Applicants' Remarks/Arguments) that the face thickness of the hard face material 28 is the same as the rest of the shroud 20. Claim 1 recites that the bearing face thickness is greater than the nominal thickness of the shroud. Claim 7 recites that the shroud body portion is planar and has an increase in thickness immediately adjacent the contact portion of at least one of the opposed bearing faces to provide the contact portion of the at least one bearing face with an increased surface area associated with the increased thickness. In light of Applicants' arguments, the rejection of claims 1-6 and 7-16 under 35 U.S.C. 102(b) as being anticipated by Frost 6,164,916 is withdrawn.

With regard to the rejection of claim 17 under 35 USC 103(a) as being unpatentable over Frost 6,164,916, Applicants have argued (see page 9, second paragraph of Applicants' Remarks/Arguments) that Frost does not teach any local increase in thickness adjacent the contact faces of the shroud relative to a nominal thickness thereof. Claim 17 recites the method

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of providing a local increase in the shroud nominal thickness to increase the area of the at least one shroud contact face along the contact portion length. In light of Applicants' arguments, the rejection of claim 17 under 35 USC 103(a) as being unpatentable over Frost 6,164,916 is withdrawn.

With regard to the rejection of claim 17 under 35 USC 103(a) as being unpatentable over Erdmann 5,083,903, Applicants have argued (see page 9, last two paragraphs and page 10, first paragraph of Applicants' Remarks/Arguments) that nothing taught or suggested by Erdmann suggests a need to determine a desired face contact stress for at least one shroud contact face such that a local increase in shroud area may be provided which corresponds to such a determined desired face contact stress, and that merely because turbine designers take into account stress when designing turbine components does not render the subject matter of claim 17 obvious. Upon further consideration of the above argument, and for the reason that such a modification would involve hindsight, the rejection of claim 17 under 35 USC 103(a) as being unpatentable over Erdmann 5,083,903 is withdrawn.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 1, line 4 has been amended to recite that the opposed bearing faces are integrally formed with the shroud. Claim 7, line 6 has been amended to recite that the opposed bearing faces are integrally formed with the body portion of the shroud. Although these

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amended limitations are inherent in the disclosure in paragraph 23 of Applicants' specification which states that the turbine shroud is preferably cast with the rest of the turbine blade as a single element, MPEP 608.01(o) requires that new terms that are introduced into the claims that do not appear in the specification be clarified by amending the specification so as to have clear support or antecedent basis in the specification for the new terms appearing in the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 and 7-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Erdmann 5,083,903. Note the blade in a turbine section of a gas turbine engine, the blade comprising a root near 12, an airfoil 14, and a shroud 16, wherein the shroud extends generally perpendicularly from a tip the airfoil and is defined by a pair of opposed bearing faces 18, 20 integrally formed with the shroud, and an unnumbered pair of opposed non-bearing faces, the bearing faces each having a contact portion near 18, 20 adapted contact a shroud of an adjacent blade, the shroud having a substantially constant nominal thickness and the bearing faces having a substantially constant face thickness across the contact portion, the face thickness being greater than the nominal thickness, the transition between the face thickness and nominal thickness being substantially discontinuous, with the shroud being generally planar, the bearing faces being generally planar, and the contact portions are generally at an angle from a plane perpendicular to

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the airfoil, with an unnumbered pair of knife edges extending from the shroud, the knife edges extending across an outer surface of the shroud from one bearing face to the other. The shroud is generally prismatic but for discontinuities at the opposed bearing faces and but for the knife edges. The airfoil extends from the root to the tip, and the shroud extends laterally from the airfoil portion, with the shroud having a body portion with a substantially constant thickness, with the opposed bearing faces integrally formed with the body portion, with the body portion being generally planar, with substantially all of the contact portion having the increased surface area associated with the increased thickness, with the increased surface area inherently lowering contact stresses arising from contact with at least one mating bearing face of adjacent turbine blades. The shroud extends substantially rigidly from the airfoil portion. The recitation in line 1 of claims 1-5 of "a one-piece blade" has not been given weight because it is recited in the preamble of the claims, and the body of the claims following the preamble is a self-contained description of the structure and does not depend on the preamble for completeness. *Kropa v. Robie*, 88 USPQ at 480-481; *Rowe*, 42 USPQ2d at 1553; and *IMS Technology Inc. v. Haas Automation Inc.*, 54 USPQ2d 1129, 1137 (Fed. Cir. 2000). Erdmann (column 2, lines 44-50 and column 2, lines 58-63) discloses that inserts 38 and 40, which form the wear or bearing surfaces 18, 20, have through apertures 28 therein which are filled by the casting material of the blade shroud when the inserts 38, 40 are cast in situ with the blade shroud 16, and because the casting material extends through the apertures in the inserts, the apertures become mechanically attached to the blade shroud. Because of the in situ casting of the inserts 38, 40 with the blade shroud 16, the opposed bearing faces 18, 20 are considered to be "integrally formed" with the blade shroud 16 and the body portion of the blade shroud.

Allowable Subject Matter

Claim 17 is allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
May 23, 2005



Christopher Verdier
Primary Examiner
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